SOLA SM II Light Engine
Instruction Manual

Emissions Certifications

This equipment has been tested and found to comply with the limits of EMC directive 2004/108/EC. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Safety Certifications

CB Scheme (IEC 61010-1:2010)
CE Declaration of Conformity
EMC Directive 2004/108/EC
Low Voltage Directive 2006/95/EC
IEC/EN 62471:2008, Photobiological Safety of Lamps and Lamp Systems Certification
TÜV SÜD America, NRTL Listing (UL 61010-1:2012)
TÜV SÜD America, Canadian Listing (CAN/CSA-C22.2 No. 61010-1:2012)
TÜV SÜD America, European License (EN 61010-1:2010)

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Table of Contents

1 Introduction

2 Precautions and Warnings

3 Installation and Operating Instructions

4 Spectral Output

5 Product Specifications

6 Routine Maintenance and Trouble Shooting

7 Customer Support

8 Warranty

9 Declaration of Conformance

1. Introduction

The Lumencor SOLA light engine family is designed for laboratory use by bioanalytical researchers and/or developers of life science instrumentation. The light engine provides a white light output by combining discrete, bright, light outputs directly to a sample; or in the case of fluorescence microscopy, to the objective. The SOLA SM II light engine is a powerful but easy to use solid state illumination source that is both efficient and reliable.

The solid state light sources within the SOLA SM II are controlled manually by either a rocker switch located on the front panel or by a latching foot switch (with 12 ft cable) that plugs into the 3.5 mm connector on the rear panel. This model does not support computer control.

Model numbering for the manual controlled SOLA SM II product is defined as follows: SOLA SM 5-XXX-YZ. The XXX denotes 000-999 and/or AAA-ZZZ and defines the light engine recipe. Y is any single alpha numeric and defines the version while Z is any alpha numeric which denotes the revision level.

2. Precautions and Warnings {Précautions et mises en garde}

A few simple practices will ensure trouble-free operation for the life of the light engine.

Les quelques règles simples suivantes permettront d'assurer un fonctionnement fiable pendant toute la durée de service de la source lumineuse.

Safety Instructions:
Please read and follow all safety instructions provided **BEFORE** using your new SOLA SM II light engine. Failure to comply with the safety instructions may result in fire, electrical shock, or personal injury and may damage or impair protection provided by equipment. Please save all safety instructions.

Instructions de sécurité:
Veiller à lire et à respecter toutes les instructions de sécurité fournies **AVANT** d'utiliser le nouveau SOLA SM II afin d'écarter les risques d'incendie, de décharge électrique, de blessure corporelle et de possibles dommages ou défaillance de la protection offerte par l'appareil. Conserver toutes les instructions de sécurité.

Safety Definitions {Définitions relatives à la sécurité}:

Warning: Statements identify conditions or practices that could result in personal injury.

Avertissement: déclarations qui identifient des situations ou des pratiques susceptibles d'entraîner des blessures corporelles.

Caution: Statements identify conditions or practices that could result in damage to your equipment.

Attention: déclarations qui identifient des situations ou des pratiques susceptibles d'endommager le matériel.

Safety Items {Mesures de sécurité}:

Warning: DO NOT use an unapproved power supply. The Lumencor-supplied external power supply is recommended for use with the SOLA SM II light engine. Alternative 24 VDC power supplies may be used provided that the current is limited to 5.0 A max. Also, it is imperative that the alternative power supply has output over-current protection, as the power input of the SOLA SM II is not fused. The equipment is required to be supplied by a DC power source that has been assessed to meet the requirements of a limited current circuit per clause 9.3 of IEC 61010-1. Connect the AC power cord to a receptacle with a protective safety (earth) ground terminal.

Avertissement : NE PAS utiliser une alimentation électrique non homologuée. Il est conseillé d'utiliser l'alimentation électrique externe fournie par Lumencor avec la source lumineuse SOLA. Il est possible d'utiliser une autre alimentation électrique continue 24 V à condition que l'intensité soit limitée à 5,0 A maximum. En outre, il est impératif qu'elle présente une protection de sortie contre les surintensités, car l'entrée d'alimentation du SOLA ne comporte pas de fusible. Le matériel doit être alimenté par une source d'alimentation continue qui a été déclarée conforme aux critères d'un circuit d'énergie limitée en vertu de la clause 9.3 de CEI 61010-1. Brancher le cordon électrique sur une prise de courant protégée par une borne de terre.

Warning: RISK GROUP 2 CAUTION: Possibly hazardous optical radiation emitted from this product. Do not stare at the output of the light engine. It may be harmful to the eyes. The brightness of this light source is higher than most commercial lighting fixtures and is intended to couple directly into a microscope or other bioanalytical instrument.

Avertissement: GROUPE DE RISQUE 2 ATTENTION: Ce possible c'est produit peuvent émettre les rayonnement lumineux dangereux. Ne regardez pas à la sortie du moteur de lumière. Il peut être dangereux pour les yeux.. L'intensité lumineuse de cette source est supérieure à celle de la majorité des appareils d'éclairage disponibles dans le commerce et est conçue pour un raccordement direct à un microscope ou autre appareil de bioanalyse.

RISK GROUP 2 CAUTION
Possible hazardous optical radiation emitted from this product. Do not stare at light during operation. May be harmful to eyes.
GROUPE RISQUE 2 ATTENTION
Ce possible c'est produit peuvent émettre les rayonnement lumineux dangereux. Ne regarder pas directement dans la lumiere. Peut être dangereux pour les yeux.

Caution Label on SOLA SM II Light Engine Package

Caution: DO NOT open the unit. There are no serviceable parts inside the light engine chassis and opening the light engine enclosure will void the manufacturer's warranty.

Attention: NE PAS ouvrir l'appareil. Il ne contient aucune pièce réparable et l'ouverture de son boîtier a pour effet d'annuler la garantie.

Caution: DO NOT set liquids on the light engine. Spilled liquids may damage your light engine.

Attention: NE PAS placer de liquide sur la source lumineuse. Les liquides renversés peuvent endommager la source lumineuse.

Caution: DO NOT drop the light engine. It contains glass optical components that could be damaged or mis-aligned by the shock produced by a drop onto a hard surface.

Attention: NE PAS laisser tomber la source lumineuse. Elle contient des composants optiques en verre susceptibles d'être endommagés ou désalignés par le choc résultant d'une chute sur une surface dure.

DISCLAIMER: Lumencor shall not be liable for injury to the user or damage to the product resulting from the SOLA light engine being used in a way for which it was not intended and in complete disregard for all posted safety precautions and warnings.

AVIS DE NON-RESPONSABILITÉ: Lumencor décline toute responsabilité pour les blessures corporelles ou les dommages au produit résultant d'une utilisation du SOLA autre que celle prévue et du mépris total de toutes les mesures de sécurité et mises en garde affichées.

3. Installation and Operating Instructions

The SOLA SM II light engine ships with the following list of standard components.

1. SOLA SM II light engine configured with an output adapter for a 3 mm diameter liquid light guide.
2. A 24 V / 5.0 A power supply (Lumencor part no. 27-10001).
3. A 6 ft AC power cord for the power supply (for North American customers, Lumencor part no. 29-10002, for UK customers, Lumencor part no. 29-10004, for European customers, Lumencor part no. 29-10005).

Rear Panel of SOLA SM II

When setting up the SOLA SM II light engine for use, be sure to place the unit on a hard surface and avoid blocking or restricting airflow at the air inlets or exhaust ports on the enclosure. Restricting the airflow will cause the unit to operate at elevated temperatures and

Light Guide Port

will result in decreased product life and/or premature failure.

Position the unit in an orientation that allows unrestricted access to the DC power connector at the back of the light engine. In an emergency, you may need to disconnect power to the unit quickly. The rocker switch on the rear panel controls the power to the unit. Refer to the photo on page 5 for the location of the input power connection, the foot switch connection and the power switch, all located on the rear panel.

The SOLA SM II light engine can be turned on or off manually. This product operates at maximum intensity. There is no intensity control.

The SOLA SM II light engine has a safety interlock for the light guide that prevents operation unless a liquid light guide is fully inserted into the light guide port. Before operating the unit, make sure the 3 mm diameter liquid light guide is properly installed into the light guide port (see picture at the left). The set screw should be loosened using a 2 mm hex wrench so the light guide slides all the way into the receptacle without obstruction. Once the light guide is fully inserted, lightly tighten the set screw to hold it in place. Prior to turning the light on, be sure the output end of the light guide is in a safe position, pointed away from anything that could be damaged by high intensity light, including people.

Take necessary precautions to protect yourself and others from the high intensity light when turning on the unit. The rocker switch on the front panel may be used to turn the light on. A green front panel light indicates that the illumination sources are on.

Alternatively, a foot switch can be used to turn the light on or off. It is recommended the foot switch be plugged into the connector when the light engine power is off, since you cannot observe whether the foot switch is in the on state or the off state by looking at the foot pedal. If the foot pedal is in the on state when the SOLA SM II light engine is powered on, the light output will turn on immediately.

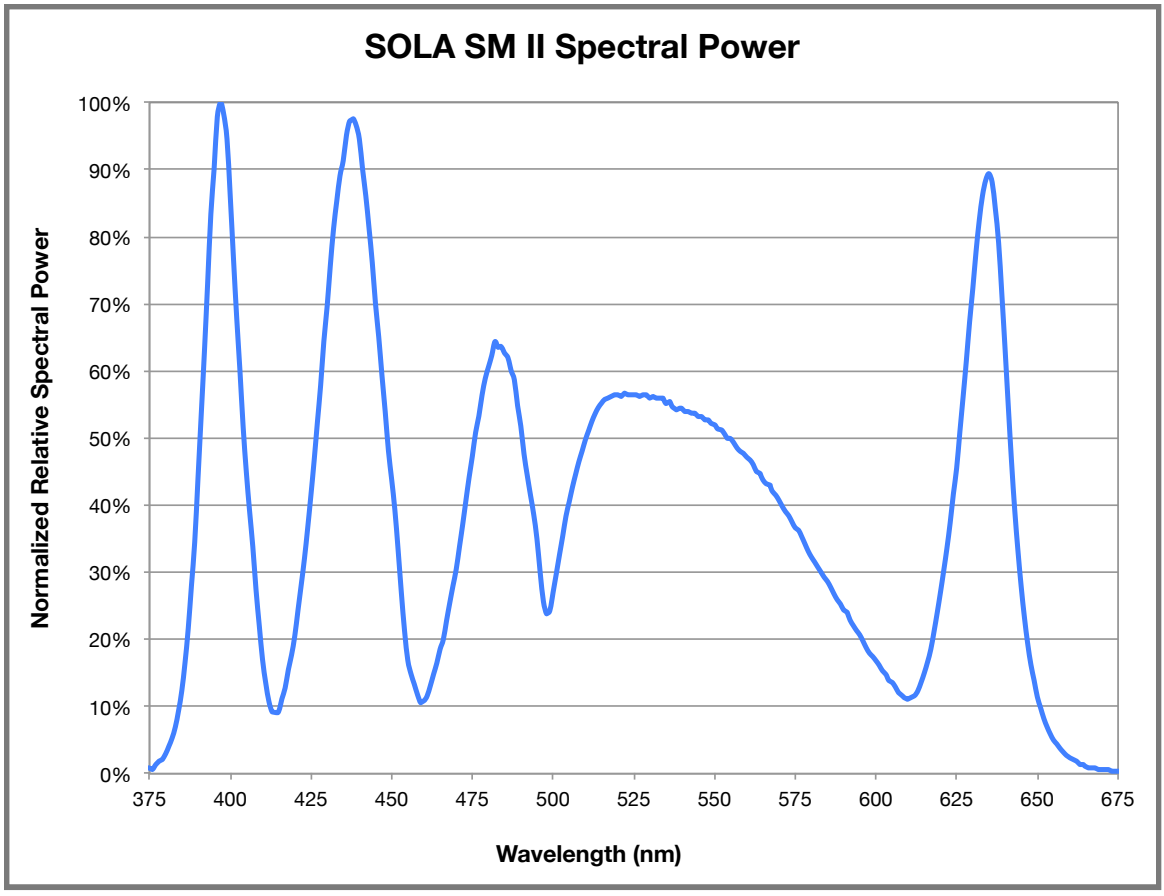
Front Side of SOLA SM II

If the front panel rocker switch is used to turn the light on, that same switch will need to be used to turn it off. If the foot pedal is used to turn the light on, the foot pedal will need to be used to turn the light off.

As a safety feature, light from the SOLA SM II light engine cannot be activated unless the light guide is fully inserted into the light guide port. In the event that the light guide is pulled from the unit during operation, the light output will cease immediately. In order to turn the light back on, you will need to: 1) turn the light engine power off, 2) fully insert the light guide into the light guide port, 3) turn the light engine power back on and then 4) activate the light using either the front panel rocker switch or the foot switch.

4. Spectral Output

The normalized spectrum shown below is representative of the SOLA SM II light engine output.



5. Product Specifications

The SOLA SM II light engine must be operated and stored within the environmental conditions specified.

Specification	Detail
Temperature	
Operating	32 to 95° F (0 to 35° C)
Non-operating	-4 to 158° F (-20 to 70° C)
Humidity	
Operating and non-operating	0 to 80% relative humidity, non-condensing
Altitude	
Operating	0 to 10,000 feet (3,048 meters)
Non-operating	0 to 20,000 feet (6,096 meters)
Dimensions (W x L x H)	4.90 x 10.4 x 6.40 in^3 / 12.5 x 26.3 x 16.3 cm^3
Weight	8.0 lb / 3.6 kg
Lifetime	> 20,000 hr
Input Power Requirements	24 VDC / 5.0 A, 120 W maximum, power supply included
Warm-up Period	1 s
Protection	IP Rating of X0
Sound Level	Sound Level at 1 m < 10 db(A)
Connections	3.5 mm foot switch (optional accessory)
Warranty	12 months parts and labor for end users

6. Routine Maintenance and Trouble Shooting

Remove any built-up dust or accumulation on the air intake ports. A vacuum may be used to remove debris so that a steady supply of air is available for cooling. It is recommended that the air intake ports be cleaned by a gentle suction device at least every 6 months and more often in dusty or smoke-filled environments.

There are no user-replaceable components or sub-assemblies in SOLA SM II light engines. Opening the light engine enclosure will void the manufacturer's warranty.

7. Customer Support

For technical support of the SOLA SM II light engine, please contact Lumencor by phone at 503.213.4269 or through email at techsupport@lumencor.com. Support information can be found on Lumencor's website at http://www.lumencor.com/support/software_control.

Any light engine return to Lumencor for technical support requires a manufacturer's issued return material authorization (RMA) number. An RMA number must be issued before returning a unit to Lumencor. Write to techsupport@lumencor.com to request an RMA number. Units that are returned to Lumencor without an RMA number will not be received. It is the customer's responsibility to properly package and safely ship products to Lumencor. RMA units should be be shipped to Lumencor, Inc., 14964 NW Greenbrier Parkway, Beaverton, OR 97006 U.S.A.

8. Warranty

The SOLA SM II light engine comes with a 12 month warranty to end users. An extended warranty option is available; extended warranties must be purchased in advance of receipt of goods or within 60 days of the light engine delivery.

9. Declaration of Conformity

The presence of the CE Mark on a product means that this instrument has been designed, tested and certified compliant to all applicable European Union (CE) regulations and recommendations.

Manufacturer: Lumencor, Inc.
14964 NW Greenbrier Parkway
Beaverton, OR 97006
United States of America

Product Name: SOLA SM II light engine
Model Numbers: SOLA SM 5-XXX-YZ
Year mark affixed: 2014
Type of Equipment: Photo-optical apparatus for illumination in research, clinical and laboratory use.

We declare under our sole responsibility that the SOLA SE II light engine, identified with the CE mark, conforms to the following directives and regulations:

CB Scheme (IEC 61010-1:2010)
CE Declaration of Conformity
EMC Directive 2004/108/EC
Low Voltage Directive 2006/95/EC
IEC/EN 62471:2008, Photobiological Safety of Lamps and Lamp Systems Certification
RoHS Directive 2002/95/EC
REACH (Registration, Evaluation, Authorization of Chemicals Regulation) Directive 1907/2006
TÜV SÜD America, NRTL Listing (UL 61010-1:2012)
TÜV SÜD America, Canadian Listing (CAN/CSA-C22.2 No. 61010-1:2012)
TÜV SÜD America, European License (EN 61010-1:2010)

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